Candidate's Examination Number. .....

THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
FORM TWO SECONDARY EDUCATION EXAMINATION

0032 **CHEMISTRY**

Time: 2:30 Hours **Thursday, 27th November 2014 p.m.**

Instructions

1. This paper consists of sections A, B and C.
2. Answer **all** questions in the spaces provided.
3. **All** writing must be in black or blue ink **except** diagrams which must be in pencil.
4. **All** communication devices and calculators are **not** allowed in the examination room.
5. Write your **Examination Number** at the top right corner of every page.
6. The following atomic masses may be used: H = 1, O = 16, C = 12, N = 14, Na = 23, P = 31, S = 32, K = 39, Ca = 40.

FOR EXAMINERS' USE ONLY		
QUESTION NUMBER	**SCORE**	**EXAMINERS' INITIALS**
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
TOTAL		

Candidate's Examination Number. .....

SECTION A (10 Marks)

1. For each of the items (i) – (x), choose the correct answer from the given alternatives and write its letter in the box provided.

(i) An isotope of carbon has an atomic number 6 and a mass number of 14, this means that it has
- A 6 protons, 8 neutrons, 6 electrons
- B 8 protons, 6 neutrons, 8 neutrons
- C 6 protons, 14 neutrons, 6 electrons
- D 14 protons, 6 neutrons, 14 electrons.

(ii) Which of the following gives the correct meaning of air?
- A Mixture of Nitrogen, Oxygen and dust particles.
- B Mixture of Nitrogen, Oxygen and Carbon dioxide.
- C Mixture of Nitrogen, Oxygen and Water vapour.
- D Homogenous mixture of gases.

(iii) Why water is a universal solvent?
- A It is neither acidic nor basic than any other known liquid.
- B It dissolves more substances than any other known liquid.
- C It occur naturally in all the three states of matter than any other liquid.
- D It dissolve both organic and inorganic solutes than any other liquid.

(iv) How many numbers of shells are there in Magnesium atom?
- A 1
- B 2
- C 3
- D 4.

(v) Technicians prefer to use blue flame in welding because
- A it is bright and non-sooty
- B it is light and non-sooty
- C it is very hot and large
- D it is very hot and non-sooty.

(vi) Which of the following is the characteristic of solid?
- A It is packed together but do not have definite size.
- B It is compact packed and have definite shape and size.
- C It is loosely packed with irregular order.
- D It is closely packed with uniform shape.

(vii) What is the oxidation state of Chlorine in $KClO_3$?
- A +2
- B -5
- C +5
- D +3.

(viii) Which of the following is a sequential method of separating mixture of salt and sand?
- A Evaporation, filtration and decantation.
- B Decantation, evaporation and filtration.
- C Sedimentation, evaporation and filtration.
- D Decantation, filtration and evaporation.

(ix) Which of the following is the best apparatus for measuring accurately the volume of a given solution?

A Measuring cylinder B Burette
C Beaker D Conical flask. [ ]

(x) The factors that affect the problem being investigated is referred as

A dependent factors B variables
C independent factors D conditions. [ ]

SECTION B (20 Marks)

2. Match each item in **List A** with a correct response in **List B** by writing its letter below the number of the corresponding item in the table provided.

List A		List B	
(i)	Method of recovery of both solute and solvent from a liquid.	A	Layer separation
(ii)	Method of separating two miscible liquids which their boiling points are close together.	B	Chromatography
(iii)	Method of separating two immiscible liquids.	C	Simple distillation
(iv)	Method of separating two solids by heating in a way that one changes its state directly to gas.	D	Condensation
(v)	Method of separating coloured components using a moving solvent on materials that absorb such solvent.	E	Hand picking
(vi)	A suitable method of separating edible oils from seeds.	F	Fractional distillation
(vii)	Method of separating solid mixture contains iron.	G	Sieving
(viii)	Method of separating an insoluble solid from a liquid.	H	Solvent extraction
(ix)	Method of separating a soluble solid and a solvent.	I	Evaporation
(x)	Method of separating liquids which forms a suspension with a solvent.	J	Sublimation
		K	Magnetisation
		L	Magnetism
		M	Deposition
		N	Decantation
		O	Filtration

ANSWERS

LIST A	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
LIST B										

SECTION C (70 Marks)

3. (a) Define the following terms:

(i) Emulsions .....
.....

(ii) A solution .....
.....

(iii) Atom .....

(iv) Radical .....

.....

(b) Write the chemical formula for each of the following compounds:

(i) Sodium sulphide .....

(ii) Beryllium chloride .....

(iii) Copper (I) oxide .....

(iv) Potassium oxide .....

4. (a) Draw a diagram to show laboratory preparation of oxygen using hydrogen peroxide. In the diagram, label all the compounds and elements involved in the preparation.

(b) Briefly explain how you would distinguish ordinary air from pure oxygen.

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(c) List two chemical properties of oxygen gas.

(i) .....

(ii) .....

5. (a) Write the name of each of the following compounds:

(i) CuO .....

(ii) PCl_3 .....

(iii) N_2O_4 .....

(iv) Na_2CO_3 .....

(b) Give three differences between the following:

(i) Physical changes and chemical changes

Physical changes	Chemical changes

(ii) Mixtures and compounds

Mixtures	Compounds

6. (a) Give four physical properties of water.

(i) .....

(ii) .....

(iii) .....

(iv) .....

(b) Calculate the molar mass of each of the following compounds:

(i) Na_3PO_4.

(ii) H_2SO_4.

(iii) $CaCO_3$.

7. (a) Study the following periodic table and then answer the questions that follow.

I	II	III	IV	V	VI	VII	VIII
	S		T		U	V	
W				X			Y
Z							

(i) Name and write the chemical symbols for the elements represented by the following letters:

S .....

W .....

X .....

Z .....

(ii) Write the electronic configuration for the elements represented by the following letter:

T ..... U .....

V ..... Y .....

(b) Name two products in each of the following fields made by the application of chemistry.

Field	Products
(i) Home care and cosmetics.	
(ii) Transport	

8. (a) Calculate the oxidation number of the underlined elements:

(i) $H\underline{S}O_3^-$	(ii) $\underline{N}O_2^-$

(b) What is the use of each of the following apparatuses?

(i) Tongs.....

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(ii) Spatula

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(iii) Pipette

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(iv) Crucible

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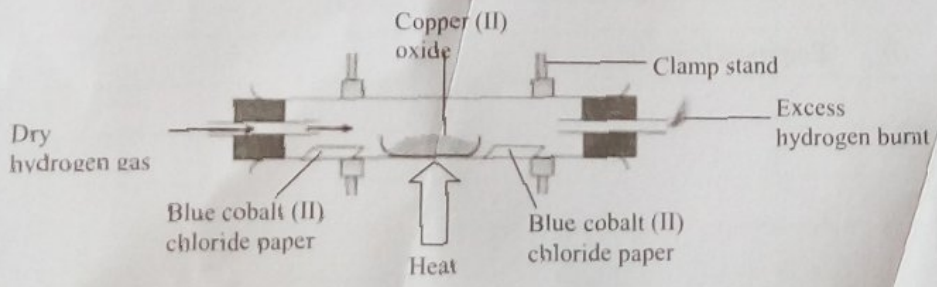
9. (a) Study the experiment diagram below and answer the questions that follow.



(i) What happens to the copper (II) oxide during the experiment?

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(ii) What happens to the two pieces of cobalt paper?

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(iii) Write a word equation for the reaction.

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(b) Mention four chemical properties of hydrogen gas.

(i) .....

(ii) .....

(iii) .....

(iv) .....

10. (a) Define the following terms:

(i) Covalent bond .....

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(ii) Electrovalent bond.....

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(b) A compound consists of 82.8% carbon and 17.2% hydrogen by mass. The vapour density of the compound is 29. Calculate:

(i) Empirical formula.

(ii) Molecular formula.